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(54) **Medication container and delivery system**

Arzneibehälter und Verabreichungssystem

Réervoir à médication et système de délivrance

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Description**BRIEF DESCRIPTION OF THE DRAWINGS****BACKGROUND OF THE INVENTION**

Dispenser devices having multiple compartments for separately enclosed materials to be mixed prior to use are disclosed in U.S. patents 3,340,873, 3,354,883, 3,397,694, 3,411,503, 4,331,146, 4,412,836, 4,330,531 and 4,950,237. These systems are complex, contain many parts, and are expensive to manufacture.

European patent specification No. 0 357 288-A corresponding to the preamble of claim 1 describes a device for storage, mixing and dispensing of two separate materials comprising a first and second container, the neck of the second container being slidably positioned within the neck of the first container.

European patent specification No. 0 069 686-A describes a device which comprises a first and second chamber, the second chamber being screwed into and sealed by a plug which fits inside the neck of the first chamber.

OBJECTS OF THE INVENTION

It is an object of the invention to provide a dispenser device having means to hold a solid and a liquid, or two liquids, separately until the time of administration. Another object is to provide a less expensive dispenser device for maintaining two components of a mixture separately until the time of administration. Still another object is to provide a more easily manufactured dispenser device for maintaining a solid and a liquid separately until the time of administration. A further object is to provide a simplified and inexpensive ophthalmic dispenser. There and other objects of the present invention will be apparent from the following description.

SUMMARY OF THE INVENTION

This invention as mainly claimed in claim 1 relates to fluid dispensing devices in which solid and liquid components, or two liquid components, of a mixture are maintained in isolation from one another and in which the separated constituents can be mixed *in situ*, when desired, by placing the constituents in communication with one another. A container inserted in the neck of the bottle holds one component of a medicament e.g., a powder or a tablet, or a liquid. Locking means prevents the container from being moved. Openings in the sidewall of the container are sealed by sleeve means in the neck of the bottle when the container is locked in position in the neck. Removal of the locking means permits the container to be moved downwardly thereby exposing the openings and permitting the component in the container to mix with the component in the bottle.

Figure 1 is a cross-sectional side elevation of a dropper dispenser device of this invention before mixing the components.

Figure 2 is a cross-sectional side elevation of the dropper dispenser device of figure 1 after mixing the components.

Figure 3 is a cross-sectional side elevation of another embodiment wherein the contents are withdrawn by means of a syringe.

Figure 4 is a cross-sectional side elevation of the syringe dispenser device of figure 3 after mixing the components.

It should be understood that the drawings are not necessarily to scale and that the embodiments are sometimes illustrated by graphic symbols, phantom lines, diagrammatic representations and fragmentary views. In certain instances, details which are not necessary for an understanding of the present invention or which render other details difficult to perceive may have been omitted. It should be understood, of course, that the invention is not necessarily limited to the particular embodiments illustrated herein.

DETAILED DESCRIPTION

The dispenser device of the present invention preferably is made of a flexible plastic material, for example, low density polyethylene, and can be prepared by any suitable technique, for example, blow molding. It is to be understood that the present invention is not limited to the specific material from which the dispenser device of the present invention is made, or the particular process by which it is made as it will be understood by those skilled in the art that many different materials and various manufacturing techniques may be employed.

The dispensing device of the present invention has a dropper dispenser tip calibrated to deliver a predetermined amount of solution. Dropper dispenser tips are known in the art.

The dispensing device of the present invention comprises a bottle means 10 adapted to receive one component of a medicament, in this case liquid 11, such as, for example, a physiologically acceptable ophthalmic liquid. It is to be understood that a solid such as, for example a tablet or a powder equally may be employed but is not shown as obvious. A rubber sleeve 12 optionally having flanged end 12a is inserted inside the neck 13 of bottle 10. A cylindrical container 14 is partially inserted into sleeve 12. The upper end of container 14 optionally is provided with threads 15 and flange 16 to receive and to hold an overcap 20. Other types of overcaps, e.g., snap-on, equally may be used. The lower sidewall of container 14 is provided with one or more openings 17. Container 14 is filled with a liquid medicament 18 but also can be filled with a solid in the form of a powder or a tablet (not shown as obvious). If one component is a solid, the other must be a liquid. A dispenser

tip 19 is inserted into the upper end of cylinder 14 and an overcap 20 is screwed onto threads 15 to protect dispenser tip 19. A locking means 21, such as a peel-off ring, is fitted around container 14 between flange 16 and flanged end 12a of sleeve 12 or the neck of bottle 10 if sleeve 12 lacks a flange. Locking means 21 prevents container 14 from being depressed until such time as it is desired to mix the two components.

As shown in figure 2, to dissolve the medicament the locking means 21 is removed and the container is lowered by pushing down on overcap 20. When the openings 17 in the lower end of container 14 move past the bottom of sleeve 12 and the bottle is tilted or inverted, the liquid and solid to contact each other.

Figures 3 and 4 show alternate embodiments to figures 1 and 2 wherein instead of a dropper tip the upper end of container 14 is sealed with a stopper 22. After removing locking means 21 and mixing the solid and liquid contents, the stopper is pierced with the needle of a syringe and the mixed liquid is withdrawn into the syringe for administration.

Claims

1. A dispenser device having means to hold a solid and a liquid, or two liquids, separately until the time of administration, the device comprising a bottle (10) having at its top a neck (13) and below the neck a body adapted to hold a first component of a medicament (11), a container means (14) to hold a second component (18), the container means (14) having openings (17), a lower end and upper end and a dislogeable locking means (21) to hold the second component (14) away from the first component (10), characterised in that the device also comprises a sleeve member (12) inserted in the neck (13), the sleeve member (12) having a first flange means (12a) that does not fit into the neck (13) of the bottle (10), and the container means being disposed in the sleeve member (12), the upper end of the container means (14) extending out of the bottle (10) past the sleeve member (12) and the part extending beyond the sleeve member (12) being provided with a second flange means (16), the locking means (21) when in a locked position being disposed between the second flange means (16) of the container means (14) and the first flange means (12a) of the sleeve member (12) such that the openings (17) of the container means (14) are sealed by the sleeve member (12) and downward movement of the container means (14) is prevented, the openings (17) in the container means (14) permitting the first and second components (11, 18) to contact one another when the locking means (21) is dislodged, thereby deactivated, and the container means (14) is moved downward from the neck (13) into the body of the bottle (10).

2. A device according to claim 1 wherein the upper end of the container means (14) is provided with dispensing means (19).

5 3. A device according to claim 2 wherein the dispensing means (19) is a dropper tip.

10 4. A device according to claim 1 wherein the upper region of the container means (14) is provided with means (15) adapted to receive and hold an overcap (20).

15 5. A device according to claim 4 wherein the receiving means is screw threads.

20 6. A device according to claim 2 wherein the upper end of the container (14) is fitted with a stopper (22) adapted to be pierced by the needle of a syringe.

Patentansprüche

1. Spendervorrichtung mit einer Einrichtung, um einen Feststoff und eine Flüssigkeit oder zwei Flüssigkeiten bis zum Zeitpunkt der Verabreichung getrennt aufzubewahren, wobei die Vorrichtung eine Flasche (10) umfaßt, die an ihrem Oberteil einen Hals (13) und unterhalb des Halses einen Körper aufweist, der einen ersten Bestandteil eines Medikamentes (11) enthalten kann, eine Behältereinrichtung (14) zum Aufbewahren eines zweiten Bestandteils (18), wobei die Behältereinrichtung (14) Öffnungen (17) aufweist, ein unteres und ein oberes Ende, und eine entfernbare Blockiereinrichtung (21), um den zweiten Bestandteil (18) von dem ersten Bestandteil (10) entfernt zu halten, dadurch gekennzeichnet, daß die Vorrichtung auch ein in den Hals (13) eingesetztes Hülsenelement (12) besitzt, wobei das Hülsenelement (12) eine erste Flanscheinrichtung (12a) aufweist, die nicht in den Hals (13) der Flasche (10) paßt, und die Behältereinrichtung in dem Hülsenelement (12) angeordnet ist, wobei sich das obere Ende der Behältereinrichtung (14) aus der Flasche (10) heraus an dem Hülsenelement (12) vorbei erstreckt, und der sich über das Hülsenelement (12) hinaus erstreckende Teil mit einer zweiten Flanscheinrichtung (16) versehen ist, wobei die Blockiereinrichtung (21) in Blockierstellung zwischen der zweiten Flanscheinrichtung (16) der Behältereinrichtung (14) und der ersten Flanscheinrichtung (12a) des Hülsenelementes (12) angeordnet ist, so daß die Öffnungen (17) der Behältereinrichtung (14) durch das Hülsenelement (12) abgedichtet werden und eine Abwärtsbewegung der Behältereinrichtung (14) verhindert wird, wobei die Öffnungen (17) in der Behältereinrichtung (14) einen Kontakt der ersten und zweiten Bestandteile (11, 18) ermöglichen, wenn die Blockiereinrichtung (21) entfernt und dadurch entaktiviert wird, und die Behältereinrichtung (14) von

dem Hals (13) nach unten in den Körper der Flasche (10) bewegt wird.

2. Vorrichtung nach Anspruch 1, worin das obere Ende der Behältereinrichtung (14) eine Abgabeeinrichtung (19) besitzt. 5

3. Vorrichtung nach Anspruch 2, worin die Abgabeeinrichtung (19) eine Tropferspitze ist. 10

4. Vorrichtung nach Anspruch 1, worin der obere Bereich der Behältereinrichtung (14) eine Einrichtung (15) besitzt, die eine Abdeckkappe (20) aufnehmen und festhalten kann. 15

5. Vorrichtung nach Anspruch 4, worin die Aufnahmeeinrichtung ein Schraubengewinde ist. 20

6. Vorrichtung nach Anspruch 2, worin das obere Ende des Behälters (14) mit einem Verschlußstopfen (22) versehen ist, der mit der Nadel einer Spritze durchstochen werden kann. 25

Revendications

1. Dispositif de distribution comportant un moyen pour contenir un solide et un liquide ou deux liquides séparément jusqu'à l'instant de leur administration, le dispositif comprenant une bouteille (10) comportant au niveau de sa partie supérieure un goulot (13) et au-dessous du goulot, un corps conçu pour contenir un premier composant d'un médicament (11), un moyen de conteneur (14) pour contenir un second composant (18), le moyen de conteneur (14) comportant des ouvertures (17), une extrémité inférieure et une extrémité supérieure et un moyen de blocage délogeable (21) pour maintenir le second composant (14) éloigné du premier composant (10), caractérisé en ce que le dispositif comprend également un élément de manchon (12) inséré dans le goulot (13), l'élément de manchon (12) comportant un premier moyen de collerette (12a) qui ne s'emboîte pas dans le goulot (13) de la bouteille (10) et le moyen de conteneur étant disposé dans l'élément de manchon (12), l'extrémité supérieure du moyen de conteneur (14) s'étendant hors de la bouteille (10) au-delà de l'élément de manchon (12) et la partie s'étendant au-delà de l'élément de manchon (12) étant munie d'un second moyen de collerette (16), le moyen de blocage (21), lorsqu'il est en position bloquée, étant disposé entre le second moyen de collerette (16) du moyen de conteneur (14) et le premier moyen de collerette (12a) de l'élément de manchon (12) de telle sorte que les ouvertures (17) du moyen de conteneur (14) soient rendues étanches par l'élément de manchon (12) et qu'un déplacement vers le bas du moyen de conteneur (14) soit empêché, les ouvertures (17) dans le moyen de conteneur 30

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(14) permettant aux premier et second composants (11, 18) d'entrer en contact l'un avec l'autre lorsque le moyen de blocage (21) est délogé, en étant de ce fait désactivé, et le moyen de conteneur (14) est déplacé vers le bas depuis le goulot (13) à l'intérieur du corps de la bouteille (10).

2. Dispositif selon la revendication 1, dans lequel l'extrémité supérieure du moyen de conteneur (14) est munie d'un moyen de distribution (19).

3. Dispositif selon la revendication 2, dans lequel le moyen de distribution (19) est un embout de goutte à goutte.

4. Dispositif selon la revendication 1, dans lequel la région supérieure du moyen de conteneur (14) est munie d'un moyen (15) conçu pour recevoir et maintenir un capuchon (20).

5. Dispositif selon la revendication 4, dans lequel le moyen de réception est constitué par des filets de vissage.

6. Dispositif selon la revendication 2, dans lequel l'extrémité supérieure du conteneur (14) se voit emboîter un moyen d'arrêt (22) conçu pour être percé par l'aiguille d'une seringue

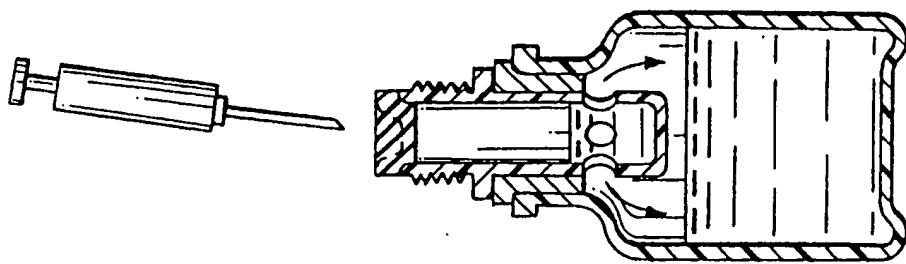


FIG. 4

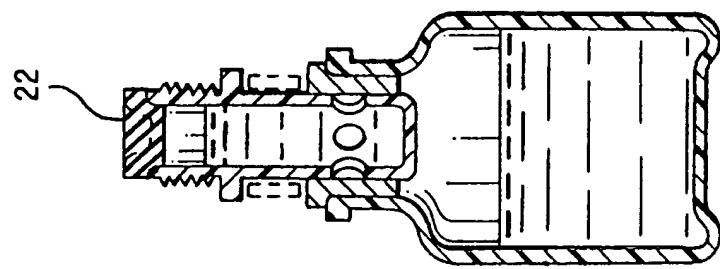


FIG. 3

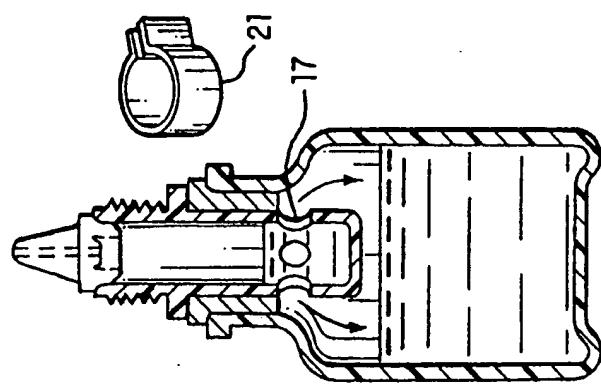


FIG. 2

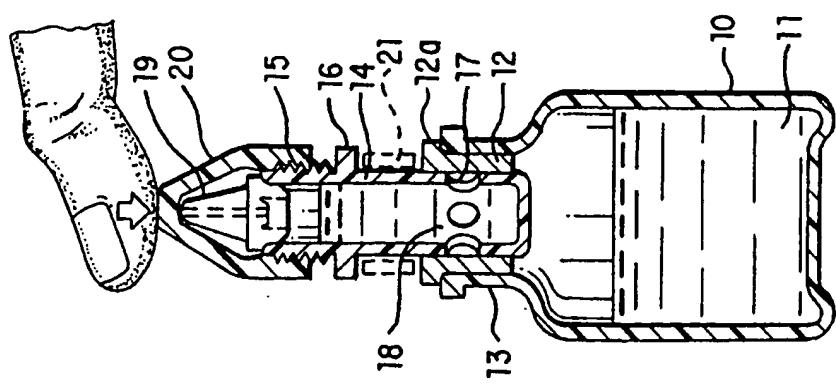


FIG. 1